REMARKS

Claims 1-20 are pending in the application. The Examiner has rejected Claims 1, 9, 12, 15, 16 and 18 under 35 USC 103(a) as being unpatentable over AAPA in view of Fung; and, has rejected Claims 2-6, 10-11, 13-14, 17 and 19-20 as unpatentable over AAPA in view of Fung and further in view of Pinheiro. For the reasons set forth below, Applicants respectfully contend that the claims are patentable over the cited art.

The present invention provides a method, system and program storage device for managing workload on a system comprising a plurality of resources on which virtual machines are running. It is important to understand that running a virtual machine at a resource is not the same as simply performing one assigned task at a resource. As taught in the present Specification, virtual machine (VM) technology abstracts the physical resources of a given server into one or more encapsulated, logically isolated operating system instances. As such, a VM is not simply a task for execution, but comprises an operating system instance and the applications associated therewith. A VM must necessarily maintain state in order to be moved from

one resource to another. Under the present invention, when the relationship between needed resources and available resources has been determined, steps are taken to instruct the VM to migrate workload from at least one resource to at least one other resource. Once the migration has occurred, power management steps can be taken, such as powering down or powering off resources from which the VMs have migrated. Applicants note that it is not simply a task or a plurality of tasks that are being moved. Rather, under the present invention, at least one virtual machine, comprising an operating system instance and applications, that is being moved. Further, the VM is not simply shifted, but is instructed to migrate itself from one resource to another resource. In order to migrate, the VM must maintain its state by pausing, copying its state into a storage location, and then resuming processing at the new location. Applicants respectfully assert that instructing a VM to migrate itself to another resource is not taught or suggested by the prior art.

The Examiner has cited Applicants' admitted prior art (AAPA) against the claim language. The AAPA acknowledges that workload balancing is known and that power management is known. However, as Applicants have expressly taught in the Specification, no prior mechanism existed for balancing

workload and managing power for instances that require that state be maintained, and no mechanism existed for VMs. The Examiner concludes that under the AAPA, the number of resources "must be determined". However, the Examiner does not cite any specific teaching of steps or means for determining numbers of resources (needed or available). The Federal Circuit has stated that when patentability turns on the question of obviousness, the obviousness determination "must be based on objective evidence of record" and that "this precedent has been reinforced in myriad decisions, and cannot be dispensed with." (In re Lee, 277 F. 3d 1338, 1343 (Fed. Cir. 2002)). Further, the Federal Circuit has stated that "conclusory statements" by an examiner fail to adequately address the factual question of motivation, which is material to patentability and cannot be resolved "on subjective belief and unknown authority" (Id. at 1343-1344). As such, Applicants respectfully assert that the Examiner has not adequately supported the conclusion that the AAPA teaches the claim features.

Moreover, the additional Fung teachings do not provide means or steps for managing a workload and power in a system wherein virtual machines are operating. What Fung teaches is workload shifting and power management among a

plurality of nodes. Fung does not, however, teach or suggest that the workload comprise virtual machines. Further, Fung does not teach or suggest that the management of the workload comprises instructing at least one virtual machine to migrate. As stated above, moving an instruction from one node to another is not the same as nor suggestive of instructing a VM to migrate.

For a determination of obviousness, the prior art must teach or suggest all of the claim limitations. "All words in a claim must be considered in judging the patentability of that claim against the prior art" (*In re Wilson,* 424 F. 2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970). If the cited references fail to teach each and every one of the claim limitations, a *prima facie* case of obviousness has not been established by the Examiner. Since neither the AAPA nor Fung teaches or suggests VMs or the management of workload and power based on instructing VMs to migrate, it cannot be maintained that the combination of references obviates the invention as claimed.

Applicants further assert that the additionally-cited Pinheiro reference does not provide that which is missing from the AAPA and Fung combination. In citing Pinheiro, the Examiner concludes that sharing a file system among servers implies that the storage of the file system is

shared. Even if a file system is shared, however, there is nothing in any of the cited references which teaches or suggests that a VM be instructed to migrate, and that the VM pauses, copies its state to a shared file, and then resumes processing at another location. The combination of AAPA, Fung, and Pinheiro simply does not teach or suggest the invention as claimed.

Applicants reiterate that for a determination of obviousness, the prior art must teach or suggest all of the claim limitations. Since the cited references fail to teach each and every one of the claim limitations, a *prima facie* case of obviousness has not been established by the Examiner.

Based on the foregoing amendments and remarks, Applicants respectfully request entry of the amendments, reconsideration of the claim language, withdrawal of the rejections, and issuance of the claims.

Respectfully submitted,
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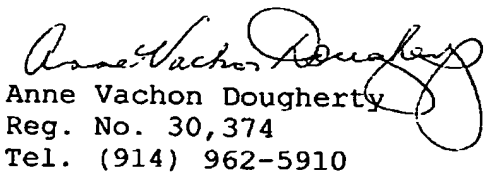
By: 
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